%DT: Introduction to Date/Time Formats

This introduction pertains to all of the %DT calls which follow. Please read this first because it is relevant to all of the %DT calls.

%DT is used to validate date/time input and convert it to VA FileMan's conventional internal format: "YYYMMDD.HHMMSS", where:

- **YYY** is number of years since 1700 (hence always 3 digits)
- **MM** is month number (00-12)
- **DD** is day number (00-31)
- **HH** is hour number (00-23)
- **MM** is minute number (01-59)
- **SS** is the seconds number (01-59)

This format allows for representation of imprecise dates like JULY '78 or 1978 (which would be equivalent to 2780700 and 2780000, respectively). Dates are always returned as a canonic number (no trailing zeroes after the decimal).

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This routine accepts input and validates the input as being a correct date and time.

Input Variables

%DT A string of alphabetic characters which alter how %DT responds. Briefly stated, the acceptable characters are:

A	**A**sk for date input.
E	**E**cho the answer.
F	**F**uture dates are assumed.
I	For **I**nternationalization, assume day number precedes month number in input.
M	Only **M**onth and year input is allowed.
N	Pure **N**umeric input is not allowed.
P	**P**ast dates are assumed.
R	**R**equires time input.
S	**S**econds should be returned.

T **T**ime input is allowed but not required.

X E**X**act input is required.

For an explanation of each character, see %DT Input Variables in Detail below.

X If %DT does not contain an A, then the variable X must be defined as equal to the value to be processed. See Date Fields in the Editing Specific Field Types chapter of the *VA FileMan Getting Started Manual* for acceptable values for X and for the interpretation of those values.

%DT("A") (Optional) A prompt which will be displayed prior to the reading of the input. Without this variable, the prompt "DATE:" will be issued.

%DT("B") The default answer to the "DATE:" prompt. It is your responsibility to ensure that %DT("B") contains a valid date/time. Allowable date input formats are explained in the Editing Specific Field Types chapter of the *VA FileMan Getting Started Manual*.

%DT(0) (Optional) Prevents the input date value from being accepted if it is chronologically before or after a particular date. Set %DT(0) equal to a VA FileMan-format date (e.g., %DT(0)=2690720) to allow input only of dates greater than or equal to that date. Set it negative (e.g., %DT(0)=-2831109.15) to allow only dates less than or equal to that date/time. Set it to NOW to allow dates from the current (input) time forward. Set it to -NOW to allow dates up to the current time.

NOTE: Be sure to kill this variable after returning from %DT.

Output Variables

Y %DT always returns the variable Y, which can be one of two values:

Y=-1	The date/time was invalid.
Y=YYYMMDD.HHMMSS	The value determined by %DT.

X X is always returned. It contains either what was passed to %DT (in the case where %DT did not contain an A) or what the user entered.

DTOUT This is only defined if %DT has timed-out waiting for input from the user.

%DT Input Variables in Detail

A %DT **A**sks for input from the terminal. It continues to ask until it receives correct input, a null, or an up-arrow. If %DT does not contain the character A, the input to %DT is assumed to be in the variable X.

E The **E**xternal format of the input will be echoed back to the user after it has been entered. If the input was erroneous, two question marks and a "beep" will be issued.

F If a year is not entered (example 1), or if a two-digit year is entered (example 2), a date in the **F**uture is assumed.

EXCEPTION: If a two-digit year is entered and those two digits equal the current year, the current year is assumed even if the date is in the past (example 3).

Example	Current Date	User Input	Date Returned	Returned Without F
1)	July 1, 2000	5/1	May 1, 2001	May 1, 2000
2)	July 1, 2000	5/1/90	May 1, 2090	May 1, 1990
3)	July 1, 2000	5/1/00	May 1, 2000	May 1, 2000

See Y2K Changes below for the behavior of %DT when neither the F nor P flag is used.

I For **I**nternalization, this flag makes %DT assume that in the input, the day number precedes the month number. For example, input of 05/11/2000 is assumed to be November 5, 2000 (instead of May 11, 2000). Also, with this flag, the month must be input as a number.

For example, November must be input as 11, not NOV.

M Only **M**onth and year input is allowed. Input with a specific day or time is rejected (example 1). If only a month and two digits are entered, the two digits are interpreted as a year instead of a day (example 2).

If the M flag is used with the X flag, a month must be specified; otherwise, the input can be just a year (example 3).

M Flag

Example	Date Input	Date Returned	Returned Without M
1)	7-05-2005	invalid	July 5, 2005
2)	7-05	July 2005	July 5, 2000*

*Assuming the current year is 2000 and the F and P flags aren't used.

M Flag (with X Flag)

Example	Date Input	Date Returned	Returned Without X
3)	05 or 2005	invalid	2005

N Ordinarily, a user can enter a date in a purely **N**umeric form, i.e., MMDDYY. However, if %DT contains an N, then this type of input is not allowed.

P If a year is not entered (example 1), or if a two-digit year is entered (example 2), a date in the **P**ast is assumed.

EXCEPTION: If a two-digit year is entered and those two digits equal the current year, the current year is assumed even if the date is in the future (example 3).

Ex.	Current Date	User Input	Date Returned	Returned Without P
1)	March 1, 1995	6/1	June 1, 1994	June 1, 1995
2)	March 1, 1995	6/1/98	June 1, 1898	June 1, 1998
3)	March 1, 1995	6/1/95	June 1, 1995	June 1, 1995

See Y2K Changes below for the behavior of %DT when neither the F nor P flag is used.

R Time is **R**equired. It must be input.

S **S**econds are to be returned.

T **T**ime is allowed in the input, but it is not necessary. See Date Fields in the Editing Specific Field Types chapter of the *VA FileMan Getting Started Manual* for details of how user-input times are interpreted.

X E**X**act input is required. If X is used without M, date input must include a day and month. Without X, the input can be just month-year or only a year.

If X is used with M, date input must include a month. If M is used without X, then the input can be just a year.

Y2K Changes:

If no year is entered, the current year is assumed (example 1).

If a two-digit year is entered, a year less than 20 years in the future and no more than 80 years in the past is assumed. For example, in the year 2000, two-digit years are assumed to be between 1920 through 2019.

NOTE: Only the year, not the current month and day, is taken into account in this calculation (examples 2 through 5).

Example	Current Date	User Input	Date Returned
1)	Sep 15, 2000	3/15	Mar 15, 2000
2)	Sep 15, 2000	1/1/20	Jan 01, 1920
3)	Sep 15, 2000	12/31/20	Dec 31, 1920
4)	Sep 15, 2000	1/1/19	Jan 01, 2019
5)	Sep 15, 2000	12/31/19	Dec 31, 2019

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There are two ways to convert a date from internal to external format—this call and X ^DD("DD"). (This is the reverse of what %DT does.) This entry point takes an internal date in the variable Y and converts it to its external representation.

Example 1

```
>S Y=2690720.163 D DD^%DT W Y
JUL 20, 1969@1630
```

This results in Y being equal to JUL 20, 1969@16:30. (Single space before the 4-digit year.)

Input Variables

Y	(Required) This contains the internal date to be converted. If this has five or six decimal places, seconds will automatically be returned.
%DT	(Optional) This forces seconds to be returned even if Y does not have that resolution. %DT must contain S for this to happen.